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C. A. McMURRY

THE RHINE

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CENTRAL TOPICS IN GEOGRAPHY

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No. 1: THE RHINE

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BY
CHARLES A. McMURRY, PH. D.
NORTHERN ILLINOIS STATE NORMAL SCHOOL

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THE RHINE RIVER

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GENERAL PHYSICAL CHARACTER.

The Rhine has its sources high among the narrow rugged valleys of the Alps. Its mouth, on the contrary, is broken up into the sluggish streams which spread out over the delta lands of Holland. No greater contrast could be found than that between the brawling mountain torrents of the Upper Rhine springing from the foot of glaciers and snow fields, rushing down over falls and rapids through deep and narrow canyons on the one side, and on the other, the flat meadow and muddy canals of Holland. Between the steep and dangerous precipices of the Alps and the dyke-protected low lands of Holland the Rhine traverses a great variety of country. Like the Hudson, which descends from the forest-clad slopes of the Adirondacks, and cuts its way through deep valleys to the plains, and later breaks through mountain ridges on its way to the sea, the Rhine presents a beautiful series of changes of scenery.

After leaving the Alpine gorges and high mountain valleys, the Rhine swings round the eastern bounds of Switzerland and pours the combined waters of its mountain streams into the broad basin of Lake Constance.

With the spring floods and rains the swift stream carries down into the lake a great quantity of mud and sand and spreads it out, forming a delta several miles long at the upper end of the lake. Thus 700 miles before it reaches Holland the Rhine is a delta-forming stream.

A number of streams which flow northward from the Alps and Jura, draining the upland plain of Switzerland, combine their waters into the Aar and pour them into the Rhine. The Aar, with its branches, drains the large lakes of Neuchatel, Lucerne, Thun, and Zurich. In springtime these numerous lakes are reservoirs receiving the surplus waters of melting snows and rains of the Alps, and by letting them out gradually prevent heavy floods in the lower Rhine Valley. Like the Great Lakes of the St. Lawrence System, these lakes serve as reservoirs, preventing floods in the lower stream and regulating the water supply.*

From Basel to Mainz the Rhine flows through a broad flood plain about twenty miles in width, lying between the Black Forest on the east and the Vosges Mountains on the west. The Black Forest is really a mountain district whose slopes are covered with heavy dark forests, from which it derives the name. From this rugged wooded tract are obtained many of those large lumber rafts which the traveler often sees floating northward down

*The Upper Mississippi in Minnesota has lakes and artificial reservoirs which collect and hold back the spring floods for use later in the season.

the Rhine with the huts of the lumbermen built upon them. The Upper Mississippi and the rivers of Maine have similar lumber-rafts.

In former ages this flood plain is supposed to have been covered with a lake which reached from Basel to Mainz and Bingen, and extended up the valley of the Main. The Red River of the North, which lies in Minnesota and the Dakotas, is likewise the bed of an ancient lake which has now become the richest wheat producing area of the northwest. As the Rhine cut its gorge deeper through the low mountain ridge north of Bingen this lake was drained. At any rate, there is at present a winding river gorge about sixty miles in length from Bingen almost to Bonn. This deep trough through the low mountain district makes the scenic region of the middle Rhine. It is famous for its scenery, its legends and its numerous ancient castles.

At Königswinter, some seven miles south of Bonn, the Rhine emerges into the flat lands of northern Germany and, after passing several large cities, turns westward and divides into several channels which find their way sluggishly to the sea through Holland. Before the Dutch built dykes to keep out the sea the marshes of Holland were much like those at the mouth of the Mississippi. Much of the land was swampy or covered with shallow water.

By building dykes and pumping out the water by

windmills the Dutch have converted many of these swampy lands into rich meadows and farms. The swamp lands of Louisiana and Florida and of other states will be drained out in a similar way.

The Rhine in its long course from the Alps to the German Ocean has many tributaries. Chief among these is the Aar, which comes from the lake-sprinkled plateau of Switzerland. The Neckar and the Main enter the Rhine from the east, draining a good part of South Germany, while farther north the Lahn, Ruhr, and Lippe are smaller streams famous in Western Germany. The Moselle is the chief tributary on the west, and furnishes one of the chief highways from the Rhine into France.

The Rhine basin as a whole is one of the richest and most populous regions of Europe, abounding in fruitful valleys and hill slopes, with numerous large cities as centres of trade and population. Lying as it does on the frontier between large nations, actually claimed and occupied at different times both by Germany and France, controlled at its sources by Switzerland and at its mouth by Holland, it has been the battleground and theatre of most important events in Europe for 2,000 years.

All the middle and best portions of the Rhine on both sides are now strongly held by Germany.

Of all the rivers in the world the Rhine is most visited by sightseers from other lands. From the green pastures of Holland, where the great windmills swing their clumsy

arms, pumping the water into the rivers, to the mountain gorges of the Alps, the Rhine is interesting at all points. But there are certain shorter stretches of the Rhine course which hold out unusual attractions to the tourist. Chief among these is the sixty mile gorge which the river has cut through a mountain district between Bonn and Bingen. These mountains are not high like those of the Alps, not even as high as those through which the Hudson breaks at West Point, and Donderberg (for in this region the scenery of the Hudson exceeds that of the Rhine), but in this sixty miles of winding gorge the Rhine displays a changing panorama of steep cliffs and wooded mountain slopes, of summits crowned with crumbling castle walls, of terraced vineyard slopes, of medieval towns nestling at the foot of antique castles, of frowning fortresses for the protection of modern cities, and even of green meadows and woods in the bottom lands.

Even more striking than the scenery, perhaps, is the romance of medieval tradition, and the thrilling story of historic deeds which this valley commemorates. The islands in the river, the hilltops, and mountain slopes are decorated with ancient and modern monuments of historical events.

About seven miles south of Bonn this highland region of the Rhine begins with the Seven Mountains on the east side, the Drachenfels standing nearest the river and

lifting the fragments of its old castle wall about 800 feet above the stream. A railroad climbs from the village of Königswinter to the top of this mountain, and from this point one can look up the valley several miles, seeing the fields, and meadows, and villages spread out between the slopes on either side. At this place one stands at the point of division between the flat lands stretching northward beyond Cologne to Holland and the rugged hill and mountain country through which the Rhine comes winding from the South.

At the Drachenfels we find ourselves not only at the gateway of a whole series of picturesque views, but entering likewise a region rich in mythical and historical story. It was on the slope of the Drachenfels that Siegfried performed his great feat of slaying the dragon, and in full view westward across the river is the ruin-covered hilltop where Roland spent his later years, in sight of the nuns' cloister on an island in the Rhine, where his betrothed had entered as a nun, thinking he had perished in battle.

From Königswinter one has a choice of several modes of travel up through the gorge. A steamboat in the bright hours of a single day will carry one to Mayence, along the winding river in perfect prospect of a rapid succession of changing mountain views, of castle-crowned summits, of steep granite cliffs or long wooded slopes, of old feudal villages nestling on the narrow margin be-

tween the river and the rocks. Every bend in the river brings a wholly changed scene. Other streams come down to meet the Rhine from the east and west through deep valleys which rival the Rhine in their scenic beauty.

A railroad on either side of the river, piercing the projecting ridges with frequent tunnels, enables one to get a swift but unsatisfactory glimpse of this famed region, but perhaps the best way to enjoy such a journey is to take a carriage or a trip on foot, with plenty of time to climb to the castles and other lookout points. One can also descend at any time to the river and take short journeys by steamboat, landing at points worth visiting.

There are many notable rocks, chapels, and ancient ruins which well repay such a leisurely journey, with commanding outlook upon the valley and surrounding mountains. Such is St. Apollinaris' chapel on a hill above Remagen on the west bank of the Rhine. "In the frescoes adjoining the church the story of St. Apollinaris is illustrated. In one transept the picture represents the statue of Jupiter, at the prayer of the saint, falling from its pedestal in the presence of the Roman Emperor; in the other transept St. Apollinaris restores to life the daughter of the governor of Ravenna."

Two or three miles south of Coblenz on the west bank stands the castle of the Stolzenfelz, 300 feet above the river, built upon a cliff which stands out on the moun-

tain slope, and is surrounded by woods. From the battlements of this castle, now restored and sometimes occupied as a summer home by the German Emperor, one may view that deep gorge which the Rhine has scoured out. Opposite the castle opens the valley of the Lahn which here unites with the Rhine, coming down through the dark wooded hills from Emms.

Between Coblenz and Bingen the valley is more narrow and gorge-like than further north, twisting and winding through the mountains, turning past the steep and frowning precipice of the Lorelei, fabled in song and story.

The black mass of the Lorelei projects into the river and the reefs at its base once produced a dangerous whirlpool where boats were often wrecked. The echoing rocks and the foaming waters may have given rise to the story of the siren who sat upon the summit of the Lorelei and by her sweet song lured the boatmen to destruction. But the rocks which obstructed the channel have been blasted out and a railroad tunnel now pierces the frowning rock (as has likewise happened to the cliff of Anthony's nose in the highlands of the Hudson).

On a high rock back of St. Goar are the ruins of the largest of the old robber castles along the Rhine. It was first built in the 13th century, and became a dangerous nest of robber knights who levied tribute from the travelers and merchants passing along the Rhine. Later

the League of the Rhenish towns, including more than a hundred towns along and near the Rhine, sent an army against it and besieged it for fifteen months, but without success. Returning later with a larger force, they captured the castle and drove out the robbers. In later years it remained an important fortress in the wars between France and Germany, and was several times besieged.

Many of the castle walls which are now crumbling ruins were originally robber castles occupied by the small princes who lived along the Rhine and plundered the people who followed this natural route of travel.

One of the most imposing scenes on the Rhine is the grand bend just below Bingen, where the river sweeps round the huge shoulder of the mountain. "Here the great river enters the majestic gorge that has given the noble stream most of its fame in weird tradition and picturesque beauty. For seventy-seven miles from Bingen northwestward to the Seven Mountains the Rhine winds through successive ravines and chasms, breaking down the rocky ridges crossing its path." (Joel Cook.)

This southern gateway to the highlands of the Rhine, though wholly different, is quite as interesting as the northern entrance at the Seven Mountains. The ruined towers of the ancient castle of Ehrenfels, on the rocky slope round which the river bends, seem to guard this gateway to the gorge. Down in the river directly in

front of this castle is the fabled Mouse Tower, upon an island.

Across the Rhine is Bingen. The whole southern slope of the Niederwald Mountain is covered with terraces of vineyards. From the midst of these, high up the mountain slope, rises the majestic Niederwald Monument, built by Germany at the close of the Franco-Prussian War, as a significant token of their lordship over the Rhine. For the gigantic figure of Germania which crowns this monument reaches out her sceptre of authority toward the south-lying regions of Alsace and Lorraine.

The Rhine gorge which we have thus briefly described leads the rivers of Europe for its combination of scenic and historic interest. Other rivers of Europe may, however, surpass the Rhine in some particulars. The Upper Danube, above Vienna, is much grander in its imposing mountain scenery, and its ancient cities and castle-crowned rocks may compare well with those of the Rhine. The Elbe River above Dresden, in what is known as the Saxon Switzerland, has some imposing cliffs and hill fortresses, such as the Königstein and the Bastei, where it breaks through the Bohemian mountains. Some of the rivers of France likewise, with their ancient castles and historic cities, with their beautiful river scenery, are almost as attractive as the Rhine.

In Spain the rivers have cut deep valleys in their de-

scent from the interior plateau to the sea shore and display great variety of natural beauty.

In the United States the Hudson is frequently compared with the Rhine, because of its magnificent scenery in the Highlands through which the Hudson River steamers carry thousands of sightseers in summer time. The Hudson, like the Rhine, breaks through a mountain range in order to produce the scenery of the Highlands.

The Upper Mississippi also, from St. Louis to St. Paul, is lined with grand and imposing bluffs, between which the great river winds for hundreds of miles.

A boat trip along the Columbia River from below the Dalles, where it breaks through the Sierra Nevada to the Pacific, is far more grand in its mountain scenery than anything along the great rivers of Europe. A voyage through the Thousand Islands of the St. Lawrence to Montreal and Quebec is also regarded as one of the great scenic trips. The peculiar advantage of the Rhine seems to be its location in the center of Western Europe and its remarkable combination of natural scenery with historical and legendary events.

The Middle Rhine south of Mainz, winding through a valley eighteen miles wide, has little attractive scenery. A few miles east of the river where the Swartzwald and Odenwald mountains descend somewhat abruptly to the plain, we again meet some of the most romantic scenery along the Rhine. Where the Neckar breaks through the

hills to join the Rhine is Heidelberg, and up among the forests of the mountain slope back of the town, is the most famous castle of Germany. Like many other castles along the Rhine, it is built upon a projecting spur half way up the mountain side and overlooking the town and the valley below, from a height of 330 feet.

The ground plan of the castle is that of a great square, its outer walls about twenty feet thick and surrounded by a wide moat or ditch. On each side of the four corners was a massive tower of several stories with interior winding stairways. An open court occupied the interior of the castle, and around the four sides of this court were built, during a period of five hundred years, from the 12th to the 17th centuries, the magnificent apartments whose ruins still surprise the visitor with their architectural display. Having been added to by different rulers during a period of five centuries, the buildings fronting on this great court yard represent a striking variety of styles in architecture. The entrance was by a massive gateway and drawbridge upon the east side. The palace buildings, which surrounded the great court, contained the drawing rooms, banqueting halls, and living rooms of the princely family and their numerous attendants and guards. A chapel was built in one of the angles of the castle where the occupants and the castle folk attended religious service. In one of the rooms adjoining the kitchen is shown the remnants of

the great oven where oxen were roasted whole. The foundation walls are massive arches and pillars of masonry, and in the underground wine cellar is still admired the mighty wine cask which held 800 hogsheads of Neckar wine, and was in the fall filled from the vintage of the neighboring hills. Underneath these gloomy foundations lie the dungeons in which unfortunate prisoners were kept. This castle is massive in construction and of unusual size, and was able to provide food and shelter for a large garrison.

For several centuries Heidelberg was the capital of the Palatinate, the neighboring province of the Rhine, and this castle was the magnificent home and palace of the Counts of the Palatine, who took pride in decorating its interior court with beautiful and costly structures, and in building up its outer walls and towers of immense thickness. By additions and enlargements it had become early in the 17th century not only a princely residence, but one of the strongholds of western Germany. During the fierce religious wars of the 17th century it often suffered bombardment and was more than once captured and devastated. It has been said that it was "five times bombarded, twice laid in ashes, thrice taken by assault and turned over to pillage." It was again restored, but in 1764 the great red tower was struck by lightning and the buildings were burned. Since then for more than one hundred and forty years it has lain in ruins and is

overgrown with ivy. But its walls are so massive that they still stand tolerably complete, and its great towers still overlook the valley and the city. Surrounding it are shady forests and beautiful park walks which are much frequented in the summer time. During one of the sieges the French assailants planted a mine under one of the great towers. The explosion split the tower from top to bottom, one-half of it falling into the moat; the other half still stands, revealing the massive construction and winding stairway within.

Heidelberg castle is only one of the interesting castles which overlook the valley of the winding Neckar, and farther south, scattered along the spurs of the Black Forest, are other similar ruins, the relics of an age when the lords of the land sheltered themselves behind mighty stone walls and battlements. With the invention of gunpowder and the use of firearms these old castles, most of them originally built during the middle ages, were no longer able to stand. They were battered down with cannon balls or blown up with gunpowder, and most of them now stand as ivy-covered ruins, telling of an age and customs long since passed away. Some of them have been restored, and because of their beautiful situation and palatial apartments have become the summer home of kings or wealthy princes. Such are the Rheinstein and the Stolzenfels on the Rhine, or the magnificent palace of Wernigerode, which, standing on a northern

spur of the Hartz, overlooks a wide reach of country and the city at its feet.

The banks of the Rhine and all its tributary streams display a constant succession of those battered and crumbling ruins. While traveling through the valley we are seldom out of sight of these relics of feudal times, and three or four may be seen from a single spot. Even far up in the high Alps, not far below the Splugen Pass, is one of these castles. Eight hundred feet above the river, and overlooking the town of Thusis, is the Hohen Rhatien castle, built perhaps as early as 589, the oldest castle of Switzerland. It is surrounded by an amphitheater of mountains, rising some of them 8,000 feet.

"Someone who has gone down the Rhine has recorded that from its sources to its mouth there are along its banks, crowning the hilltops and originally controlling the river passage, no less than seven hundred and twenty-five castles, formerly the homes of warlike chiefs, many of them renowned in song and story." (Joel Cooke.)

But the Rhine is only one among many similar rivers in Europe. The Danube is likewise a castle-crowned stream, and the old ruins that look down through its winding and rocky gorges have many a tale to tell of mediaeval chivalry and later history (Richard I.). The other rivers of Germany, as the Elbe, the Saale, the Oder, and the Vistula, have scarcely an ancient town whose houses were not overlooked by the walls of some high

neighboring castle. Likewise the Harz Mountains and the Thuringian Forest in Central Germany were ruled during the middle ages by warrior knights who nested themselves safely in their strong towers on the hilltops or mountain spurs. One of the most famous of these old castles is the Wartburg, 600 feet above Eisenach, in Thuringia, where Luther abode in retreat while he translated the New Testament.

In France and Spain, likewise, the river cliffs were the chosen places for many a feudal castle. Even in the great cities, the old princely burgs, which were the original abode of kings and rulers, are still prominent centres of interest. Das Alte Schloss, in Berlin, the present home of the Emperor, has been for centuries a fortress castle of kings. The Louvre, in Paris, was originally a strong royal castle. The tower of London, which still looks like a gloomy mediaeval burg, was long the abode of royalty, and the citadel of the capital. The old castle of Edinburgh is still the most interesting fortress of Scotland, overlooking the city from its rocky heights. Many a European city, like Edinborough, has been built up around such a castle, as Nuremburg, Mainz, and Granada. The far-famed castle of the Alhambra, overlooking the city of Granada, even far excels Heidelberg, both in its architecture and historic associations.

In America, Quebec from its earliest history has been

a hill fortress, and has likewise figured in some of the most thrilling events of American history.

In America we have no feudal castles because America was discovered after most of the old European castles were built, and when they had already begun to lose their importance as military strongholds.

At the present time, even more perhaps than in its past history, the Rhine is of great military importance. The means of military defense, however, are now very different from the feudal castles of the middle ages.

This may be understood by an examination of the fortified city of Coblenz, lying at the junction of the Rhine and Moselle. This site commands not only the highway of the Rhine, but the road leading up the Moselle valley to France, and up the nearby Lahn to Germany. The city of Coblenz occupies a triangle of low land formed by the two rivers and a fortified rampart connects these just back of the town. Until recently this fortified wall and ditch formed an important part of the defense, but the growth of the city has made necessary the conversion of this rampart into a boulevard, and the real defenses are the fortified mountain tops which surround it. Chief among these is Ehrenbreitstein, the Broad Rock of Honor, which, rising 400 feet in solid rock front, commands both the Rhine and the mouth of the Moselle with its frowning batteries. This rock has been made into a genuine Gibraltar of mili-

tary strength, and rendered as impregnable as possible. The French, in 1799, captured the Fortress of Ehrenbreitstein by starving the garrison, and followed this by completely wrecking the works. After the fall of Napoleon, France paid Prussia $3,000,000 for the damage they had done, and the fortress was rebuilt. "Since the Franco-German War there has been a complete rearrangement of the works on modern lines, and it is defended by batteries numbering 400 guns, while three lines of defenses cross the neck of the promontory (back of the fortress). The extensive flat surface on top of the rock is a parade ground, and from the front there is a superb view. . . . . It is said to be so arranged now that a garrison of 5,000 troops can hold it, and there can be stored ten years' provisions for 8,000 men in the capacious magazines." (Joel Cooke.)

It is not only equipped with modern guns and defenses, but is still further strengthened by heavy fortresses upon the surrounding mountains. Some years ago while visiting Coblenz I walked about three miles up the Moselle Valley from Coblenz, and there began to climb a wooded hill about 800 feet in height. Upon coming near the top I found it was strongly fortified with a line of earthworks nearly a mile in circuit.

All the commanding heights from which an enemy might throw shells into the city of Coblenz are covered with defenses. In the whole circuit of the surrounding

mountains there are twenty-six of these fortresses, and they are capable of sheltering and supplying a garrison of 100,000 men. When we consider the enormous expense of constructing these heavy defenses and of keeping them in the highest state of equipment, we may, to some extent, realize the burden of military outlay that rests upon Germany. All this costly expenditure is not merely for the protection of Coblenz, but of the whole of Germany, for no French army can enter Germany between Mainz and Coblenz without first taking Coblenz. In fact, Coblenz is merely a central link in a chain of fortified cities extending from Cologne to Strassburg.

What has been said about the fortifications about Coblenz may be said with an increased emphasis, perhaps, about Cologne, Mainz and Strassburg. These are in themselves very large and powerful cities, Cologne 360,000, Mainz 80,000, Strassburg 150,000 inhabitants, and they have been made as strong military bulwarks against France as modern military science can devise. Cologne is surrounded by successive circles of great earthworks extending seven miles from the city on both sides of the river. As Cologne lies in a flat country these massive earthworks are seen standing out in the open wheat fields, mounted with heavy cannon and fully equipped for the heavy and destructive work of war.

Until a few years ago Cologne was encircled by a wall and moat, with gates and drawbridges leading into

the country, but the rapid expansion of the city finally burst these bonds, and it has spread far beyond its old cramped limits.

An examination of the position of Mayence will show that it is of necessity one of the fortified cities of the Rhine. Commanding both the rich valleys of the Rhine and the Main, leading to Frankfort and Germany, it has been for many centuries one of the most important military posts of the German frontier. "The fortress covers a far-spreading range of outlying works on the surrounding eminences, commanding every approach and presenting an array of great mounds on the elevated heights, sodded with the greenest grass and having flower beds blooming upon them." It has been a fortified place since the days when Drusus, the Roman general, gathered his troops here, and in his honor the Drusus Tower was said to have been built in the year 9 B. C. Its massive foundation, about forty feet high, still stands in the citadel of Mainz.

The city of Strassburg is a still more striking illustration of military defense, for it was captured from the French in 1870, in the last war between France and Germany, after a fierce siege and bombardment. The heavy defenses of the French were battered down, and the city was greatly damaged. Since then it has become, with Alsace and Lorraine, a possession of the Germans, and is protected by a great series of detached forts, one of

which is called Prince Bismarck, extending five miles beyond the inner defenses of the city. The fortified city of Metz was also captured by the Germans in the same war, and in the hill country has become a powerful centre of German strength on the Upper Moselle, close to the borders of France.

Along the Rhine, therefore, Germany has five powerful fortresses, and they are well garrisoned even in time of peace. Just across the French border, as we might expect, is a parallel series of heavily fortified French cities, such as Belfort, Verdun, and Sedan. When war threatens, forces are concentrated at these fortified strongholds on both sides, and when hostilities are declared, armies are pushed rapidly across the border to attack the strongholds of the enemy. At the outbreak of the last war, of 1870, Germany was fully prepared, while the French were not in readiness. In consequence, within a month, the German forces had surrounded the French army in Metz, and had defeated and captured a second army, and the French Emperor, before the great fortress of Sedan. Having either captured or surrounded these frontier cities, the German armies had an open path and concentrated their forces upon Paris.

Not only on the side toward France, but also on the Austrian and Russian borders, Germany has fortified cities to defend her frontier, while they, in turn, are likewise protected against Germany. Along the Baltic and

North Sea coast is a series of fortified seaports and harbors, with a fleet of war vessels to engage the enemy. In the center of Germany is the fortified capital city of Berlin, with an army of 25,000 trained soldiers in residence, even in peaceful times.

But France for hundreds of years has been regarded as the most dangerous enemy of Germany. The French, under Louis XIV., and later under Napoleon I., captured, plundered and ruled the Rhine provinces, stabling their horses in the churches. Under the old Emperor, with the leadership of Bismarck and Von Moltke, the Germans not only recaptured Alsace and Lorraine, which Louis XIV. two hundred years before had taken, but greatly strengthened Strassburg and Metz, as well as all the cities along the Rhine. The German soldiers now sing the famous war song, "Die Wacht am Rhein," without disturbance from any foreign enemy.

In the history of the United States, the river which had the greatest military importance is the Hudson, which often witnessed the march of armies during the French and Indian wars, and in the Revolution important battles, such as Saratoga, and New York, were fought upon its banks, and strong forts, such as Fort Lee, Fort Washington, Stony Point, and West Point were established for its protection. The mouth of the Hudson is now protected at the Narrows and on East River by strong forts for the safety of New York.

The Mississippi River, during the Civil War, was also

a line of important military operations, the capture of New Orleans and of Vicksburg proving among the leading events of the war. In the East the James River, with Richmond as the capital of the Confederacy, was the basis of a number of military campaigns.

In Canada, the St. Lawrence River has also seen important military operations and battles, as at Quebec and Montreal, and the citadel of Quebec may well compare in strength with the Ehrenbreitstein.

The United States, as a whole, is far more fortunate than Germany, from the fact that it has no powerful and dangerous neighbor either north or south, and the broad ocean separates her from the powerful nations of Europe. The chief fortified posts in the United States are along the sea shore, for the defense of the seaport cities.

Cologne, the largest city on the Rhine in Germany, has also the largest of the old Gothic churches in Europe. This huge structure towers so much above the other surrounding buildings that not only its lofty spires, but the main body of the church, are visible for many miles over the flat country that surrounds Cologne. It stands in the center of the old city, on ground about sixty feet above the river. Like Catholic cathedrals generally, the great entrance doorway and towers face the west, while the choir and great windows are toward the rising sun.

An examination of the ground plan will show that it

takes the form of the cross, the great central nave, 450 feet long, formed by two rows of huge columns, rising to a lofty arch between, and this crossed by a similar archway 282 feet long, forming the transept—these constitute the cross. But the main body of the church is formed not only by the lofty archway of the central nave, but also by four somewhat lower archways running parallel to it, two on each side, and formed also by high arching pillars. Parallel also with the main arch of the transept are two lesser archways. The body of the church is, therefore formed by five great archways, crossed by three others. "The walls are 150 feet high, the roof 200 feet, the central tower over the crossing nearly 360 feet, and the two noble western towers 512 feet." A study of the ground plan and a comparison of these dimensions with those of large churches familiar to us, will show that some of our large city churches could be tucked away in the corners and side aisles of the Cologne cathedral and overlooked.

It is only by repeated visits and by walking about to observe its many parts that one gradually comes to realize the extraordinary size of this building. The church is somewhat closely crowded by surrounding buildings, but, fortunately, the front toward the west looks down a long street, which furnishes a fine view of the two mighty towers. "The interior is profoundly impressive. Entering the western portal the eye quickly glances along the

grand avenues of pillars bounding the nave, past the transept and into the choir, to the steps of the altar, and sees beyond the gorgeous light streaming in rich hues through the distant eastern window; there is nothing to obstruct the view. The nave is about fifty feet wide between the tall pillars, and rises 145 feet, having fifty-six pillars bearing the roof, and extending in splendid colonnades for nearly 400 feet. The side aisles (or arches) are sixty feet high, the inner ones being twenty-two feet and the outer twenty-seven feet." (Joel Cook.)

The great doorway at the western end is thirty-one feet wide and ninety-three feet high, with a gorgeous window of corresponding size above, the gift of the Crown Prince of Germany. The lofty spires are among the highest stone structures in the world, but they are so massive and in such harmony with the rest of the building that they seem natural and appropriate. The Washington monument in our capital is almost the only stone structure that exceeds them in height, being 555 feet tall. But their unusual size is not so wonderful as the richness and abundance of their carved decorations. The whole front of this vast structure, including the towers, gables, windows, doors, and buttresses, is richly decorated with finished carving, the finest work of the chisel; and not only the front, but the whole exterior of the church on all sides is finished and ornamented with perfection of detail. The interior also displays a profu-

sion of carved workmanship. The lofty fluted columns, massive but graceful, the overarching canopy of the great nave, the numberless statues of saints and apostles with which the pillars are decorated, the rich colors and paintings of the stained glass windows, give a sense of completeness to this, the greatest of the many Gothic churches of Europe.

The history of the construction of this wonderful church is interesting. From the laying of the corner stone in 1248 to its final completion in 1880, a period of more than 600 years passed, and yet the plan of the original architect was carried out in essentials to the end.

The choir, or eastern part, of the present church was built first and completed for solemn dedication in 1322. During the remainder of the fourteenth century the nave and wings of the transept were built. By 1447 the south tower was sufficiently built up to place the bells. Then from about 1500, for three hundred years, little was done except to decorate the interior so far as finished. During the French occupation of the Rhine and of Cologne, about the year 1796, this building was converted into a hay barn, the lead of the roof having been torn away, and it was reduced to a partial state of ruin. About 1816 the king of Prussia began to devise a plan for restoring it and the work was begun in 1823. From this time distinguished architects took the work in charge. From 1842 to 1880 large sums of money were spent partly by

government and partly raised by private subscriptions—in all, $4,500,000—and in the latter year the completed church was dedicated in the presence of the German Emperor and a great assemblage of princes. With the exception of lesser details it stands complete, as originally designed, and is a superb example of the Gothic architecture. Much of the stone for its construction was obtained from the red sandstone quarries on the side of the Drachenfels. "It is said that the masonry used in the construction of this wonderful church would build a vast city, that its outer flying buttresses would construct houses for ten thousand people. It has forests of stone foliage, myriads of grinning gargoyles, enchanting turrets, rich mosaics, and airy spires surmounting the great western towers." (Joel Cook.)

The purpose which led people in the middle ages to build these vast cathedral structures was very different from that which prompts the building of churches to-day. The Catholic church in those days was an all-powerful institution. Princes and kings were obedient to its commands, and the building of churches was regarded as the most honorable and praiseworthy deed, even for the greatest men. Many of the church dignitaries, as bishops and archbishops, were themselves powerful princes and rulers, with ample revenues, and they were, of course, inclined to use them in building churches and monasteries. It was an archbishop, St. Engelbert, who

first conceived the idea of building such a church on this spot, and one of his successors laid the foundation stone. St. Engelbert and several other archbishops are buried in the old chapels that were built around the choir. For this cathedral, like most cathedral churches, is a burial place. The tombs of these famous archbishops, decorated with elaborate monuments and reliefs, fill several of these surrounding chapels.

This church is also the depository of notable relics preserved as sacred emblems by the church. Most famous among these are the bones of the Magi or three kings, who, following the star, came from the east to worship the infant Lord. The tradition of how these remarkable relics came to Cologne is interesting. They are supposed to have been brought from Jerusalem to Constantinople by the Empress Helena, the mother of Constantine the Great. They were later brought to Milan, whence the famous Emperor, Frederick Barbarossa, carried them over the Alps to Germany and bestowed them upon the great prelate, Archbishop Renold von Dassel of Cologne. For a long time they were preserved in the chapel of the Magi in a rich casket, decorated with gold, silver and costly stones. Each of these skulls is encircled with a diamond crown. This chapel also contains an altar with a carving representing the Adoration of the Magi.

These, with other important ancient relics, are now

preserved for greater safety in a room called the treasury near the north transept.

In the chapel of St. Agnes is the large winged picture, the Adoration of the Magi, which is regarded by critics as one of the great pictures illustrating the history of art.

The possession of such famous relics as the Three Kings was what gave great reputation to a mediæval church, and thousands of pilgrims came to visit them.

The stained windows with which the church is richly decorated represent many Bible scenes.

A church like the Cologne Cathedral was not originally built so much for preaching services as for great ceremonials and processions, such as were common in those ages, and for which these vast structures were well adapted. They are also used in their central part, at the crossing of the nave and transept, for preaching services. The pulpit is built high against one of the great columns, with an overhanging canopy and a winding stairway leading up to it.

There are several other interesting churches at Cologne worthy of a visit.

In traveling up the Rhine a number of famous churches may be inspected by those interested in church architecture. At Mainz is the very interesting old cathedral of St. Martin, at Strassburg is a magnificent church almost the equal of the old Cologne Cathedral, and famous in addition for its wonderful clock. Other cities,

as Coblenz, Worms, Basel and Frankfort, have their ancient and noble churches, mostly built long before the Reformation. Even the smaller towns have churches which would do honor to large cities.

If one wished only to study church architecture a trip up the Rhine would furnish abundant examples of gothic and even of other styles of architecture. Indeed, the number of churches which the ordinary sightseer is called upon to visit and examine is confusing and almost distressing. Between old castles, mediæval churches and other ancient buildings, one could well nigh forget that one lived in the modern world, and could almost bring back the days when the valley of the Rhine was a highway for companies of robed and cowled churchmen, and for troops of armed knights mounted on their war steeds. It is rather a curious thought that the course of the Rhine, which in the middle ages was remarkable for the number and strength of its robber castles, and during recent times for great fortress cities, through all the ages has been equally famous for its grand cathedrals and its great ecclesiastical buildings and principalities.

The grand and imposing churches of Europe are not confined to the territory of the Rhine. In other cities of Germany, as in Hamburg, Magdeburg, Vienna, and, we might say, in scores of cities, are found beautiful ancient cathedrals. In France, Italy and England also are such mediæval structures, which testify to the surprising inter-

est and enthusiasm of those ages for grand and impressive churches.

Greatest and best known of all these massive buildings is St. Peter's in Rome, the largest church in the Christian world. It is fitting also that Rome should have the grandest church among Christian nations, since Rome, more than any other city, has been the center of the Christian church.

The ancient cathedral of Notre Dame, on the island in Paris, which formed the original city, is described by some as the greatest of Gothic cathedrals. It is one of the few ancient structures in Paris which have survived the revolutions, sieges and destructive changes which have occurred in Paris during 600 years.

In London, Westminster Abbey and St. Paul's cathedral are the two most famous churches in the English-speaking world, the former, the solemn burial place of so many poets, statesmen, princes and kings, the latter also a burial place, as of the Duke of Wellington, André, and others, are imposing in simple and massive construction.

"The church of St. Sophia* is, next to the Pantheon at Rome, the most central and historic edifice still standing erect. It is now in its fourteenth century of continuous and unbroken use; and during the whole of that vast epoch, it has never ceased to be the imperial fane of the Eastern world, nor has it ever, as the Pantheon,

*Note—At Constantinople.

been desolate and despoiled. Its influence over the Eastern architecture has been as wide as that of the Pantheon over Western architecture, and it has been far more continuous. It was one of the most original, daring, and triumphant conceptions in the whole record of human building; and Mr. Fergusson declares it to be internally 'the most perfect and beautiful church ever yet erected by any Christian people.' Its interior is certainly the most harmonious, most complete, and least faulty of all the great domed and round-arched temples. It unites sublimity of construction with grace of detail, splendor of decoration with indestructible material. It avoids the conspicuous faults of the great temples of Rome and of Florence, whilst it is far richer in decorative effect within than our own St. Paul's or the Pantheon of Paris. Its glorious vesture of marble, mosaic, carving, and cast metal is unsurpassed by the richest of the Gothic cathedrals, and is far more enduring. Though twice as old as Westminster Abbey, it has suffered less dilapidation, and will long outlast it. Its constructive mass and its internal ornamentation far exceed in solidity the slender shafts, the paintings, and the stained glass of the Gothic churches. In this masterly type the mind is aroused by the infinite subtlety of the construction, and the eye is delighted with the inexhaustible harmonies of a superb design worked out in most gorgeous materials.

"For Justinian and his successors ransacked the em-

pire to find the most precious materials for the 'Great Church.' The interior is still one vast pile of marble, porphyry, and polished granite, white marbles with rosy streaks, green marbles, blue and black, starred or veined with white. The pagan temples were stripped of their columns and capitals; monoliths and colossal slabs were transported from Rome, and from the Nile, from Syria, Asia Minor, and Greece, so that, with the Pantheon at Rome, this is the one example of a grand structure of ancient art which still remains unruined. The gilded portals, the jewels, pearls and gold of the altar, the choir adornment of cedar, amber, ivory, and silver, have been long destroyed by the greedy soldiers of the Cross; and the mosaics above with seraphim, apostles, prophets, and Christ in glory have been covered up, but not destroyed, by the fierce soldiers of Mahomet." (Frederic Harrison, "The Meaning of History.")

In America our cathedral churches are mostly built on the model of these old Gothic and other churches in Europe. The cathedral of St. Patrick, on Fifth Avenue, New York City, is a Gothic structure. In Montreal, New Orleans and other cities are famous churches which repeat the architecture of the famous churches of France, Germany and Italy. In Mexico, Southern California, and even in San Antonio, Texas, are a number of old Spanish churches and ruins built in the style of the Middle Age churches of Europe.

COMMERCE

The Rhine is navigable from Basle to its delta. Above Basle are rapids and falls which interfere with navigation. But on Lake Constance and the other lakes of Switzerland there is much boating, especially excursion steamboats for tourists.

Above Strassburg the Rhine is shallow, but from Mainz to its mouth the river is deep and broad and able to carry a heavy merchandise in barges and steamers. At the Lorelei and at the entrance of the gorge near Bingen were once dangerous rocks and rapids, but they have been blasted out and the channel has been cleared. In Holland the Rhine divides up into several branches and as the waters grow sluggish near the outlet to the sea, the channels silt up and make navigation difficult. Amsterdam and Rotterdam have cut artificial channels to the sea, which were made deep and protected on the sea shore with heavy breakwaters.

The Rhine is favorably located to share in the best commerce of Europe. The mouth of the Rhine, with its large commercial cities, lies opposite to London, the center of the world's commerce. Over the Alps, through Switzerland, come the products of Italy and the Mediterranean countries. Close to the Rhine on the west is France and Belgium, with their manufactures and products easily brought to Cologne, Coblenz and Strassburg. On the east are the rich states of northern and southern

Germany, while the Rhine valley itself is a very productive region.

For nearly two thousand years the Rhine has furnished the chief traffic route from north to south through Europe, connecting Italy and the Mediterranean countries with the Netherlands and Great Britain. The gorge cut by the Rhine through the low mountain range north of Bingen furnished the only good road from south Germany and Switzerland to Holland. The natural drift of caravan commerce along this route during the middle ages caused the erection of the numerous robber castles along the Rhine, from which the plundering knights and barons could come down on the merchantmen passing through the valley. For many centuries later the numerous little principalities along the river set up tolls and taxes upon goods, and this hindered and checked the flow of trade along this line. When the German states were united under Bismarck and Emperor William the First, these taxes were abolished and the traffic on the Rhine became free, as on the Hudson and the Mississippi.

One of the interesting sights along the Rhine is a great lumber raft 400 or 500 feet long, floating down the river, covered with tents in which from two to four hundred lumbermen dwell while they direct it down the current to Holland. There the rafts are broken up and sawed up into lumber. Such a raft, when it reaches Holland, is worth nearly half a million dollars. At Coblenz,

as one of these great rafts floated under the great bridge which spans the river at this place, we heard the chorus of German lumbermen singing a song as they passed the city. These rafts are made up on the Rhine from logs which are floated down the small streams of the Black Forest toward the main river.

The middle Rhine from Basel to Mainz is rich in agriculture, grain and fruits, and these products are shipped on the river. Along the Rhine valley, on the south-sloping mountains and hillsides of the great gorge along the middle Rhine, and bordering the lakes of Switzerland, are fruitful vineyards. Just north of Bingen, across the stream, the whole mountain side is terraced with vineyards, among which rises the imposing monument of Germania in the Niederwald.

The rivers of the Rhine district are famous, and contribute much to the wealth of the people. The best wine-producing district is along the river northward from Bingen and including a strip of about five miles wide. The white wines of the Rhine are the best, and the yearly product was estimated some years ago at $11,664,000. The best red wines, on the other hand, are produced about Bordeaux in France. A similar rich grape-producing region is found in the United States along the south shore of Lake Erie in New York state.

The heaviest products produced and shipped along the Rhine are coal and iron. There are large coal deposits

along the Ruhr on the lower Rhine, and the cities in the valley of the Ruhr, such as Essen, Dortmund and Elberfeld, are near the steel-producing centers of Germany, corresponding to Pittsburg in the United States. Iron is produced in Alsace and Lorraine along the Moselle and along the Rhine, and is much shipped on the Rhine. Agricultural products are also much shipped by river, and the manufactures of Switzerland and of the Rhine cities of Holland are freighted on the river boats. This valley is traversed on both sides by a railroad which competes with the boats for the shipment of all varieties of goods, as also along the Hudson and Mississippi and other rivers. A few years ago the shipment on the river boats was estimated at a million tons, and is now far greater.

The large tributary streams, as the Moselle, the Main and the Neckar, are navigable for small steamers. There are also three canals connecting the Rhine commerce with the Danube, the Rhone and the Seine, thus bringing the Rhine into direct communication with Bavaria and Austria and with southern and central France. Indeed, the Rhine-Rhone canal connects with the Mediterranean without crossing the Alps.

Perhaps the most important of all trade on the Rhine is the tourist traffic. During the summer months especially travelers from all the adjacent lands, of Germany, Holland and France, and still more from England, America, and other countries, fill the boats and hotels along

this great tourist route. It would be difficult to think of a more interesting and varied excursion than a leisurely summer journey through the quaint cities of Holland, up through Cologne and the Rhine gorge to Heidelberg and Strassburg, and on to the Swiss lakes, with the possible continuation over the Alps into the lakes and cities of northern Italy. Many years ago it was estimated that these sightseers along the Rhine numbered between one and two million yearly, and the numbers have steadily increased.

A number of bridges cross the lower Rhine, as at Mainz, Coblenz, Cologne and other cities. Some of these are bridges of boats, arranged so that a section of them can swing out of the way to allow a steamer or log raft to pass. Others are supplied with turn bridges to allow boats to pass.

The other leading rivers of Germany, as the Elbe, the Oder and the Vistula, are, like the Rhine, important highways of navigation. The Elbe especially is important, being navigable to Prague in Bohemia and having many important cities on it, such as Prague, Dresden, Magdeburg and Hamburg. Hamburg, in fact, sixty miles above the mouth of the Elbe, is the central seaport of Germany and of northern Europe, and the outlet of the Elbe toward the North Sea is much more important than that of the Rhine for Germany. The Elbe is also directly connected with Berlin, the commercial center of Ger-

many, and canals from Berlin extend also to the Oder. The amount of heavy produce, agricultural and manufacturing carried on these rivers and canals of Germany is very large and important.

The Seine, the Loire, the Garonne, and the Rhone, in France, also supply a network of navigable waters, connected by canals. But in Europe the Danube is the largest of navigable streams, and since ancient times has been a natural route of traffic between southeastern Europe and the Rhine regions. One of the old routes from India was across the Black Sea to the mouth of the Danube, and up this stream to Austria and Germany. The Danube, even more than the Rhine, passes through many countries, among people speaking several languages, as German, Hungarian, Roumanian, Bulgarian, etc. The Danube also has required a large expenditure for improvement. In its upper course, above Vienna, the current has been narrowed and deepened and near Vienna the channel, which runs among many islands, in a marshy country, has been channeled out to give better passage for large vessels. Through Hungary there is a vast traffic in the roofed steamboats, as railroads have not been built so extensively in Hungary as along the Rhine. The Danube and its tributaries in Hungary are subject to heavy floods, and banks, or levees, like those of the Rhine in Holland and of the Mississippi in the United States, have been built along the channel to hold the

floods from overspreading the lowlands. After leaving Belgrade the Danube cuts its own way through great hills and mountain ranges and through a succession of gorges, the last and greatest of which is called the *Iron Gate*, where the Carpathian mountains are broken through. Here a great shelf, or reef of rock, once caused a dangerous rapid. But the rocks, as in the Rhine, have been blasted out and a deep channel for vessels provided. At its mouth the Danube forms a delta, splitting up into a series of branches.

The Volga and the other large rivers of southern Russia, like the Mississippi in the United States, flowing through a rich alluvial farming region, are important avenues of steamboat and barge traffic.

On the whole, the rivers of Europe are not so large nor so well adapted by nature for navigation as the Mississippi and its tributaries. The Great Lakes and the St. Lawrence also furnish even a more important water traffic than the Mississippi. Europe has also a large number of short rivers with tidal estuaries which are of the greatest value in shipping. Such are the Thames with London, the Clyde with Glasgow, the Tagus with Lisbon, Nantes and Bordeaux in France with their estuary rivers. These rivers, like the Hudson, are made important by the estuaries which, with the inflowing tides, make them deep and commodious harbors for shipping. The commerce of the Rhine at its mouth is obstructed by

the deltas, as in the case also of the Danube, the Rhone, the Po, and the Mississippi.

The valley of the Rhine river from its sources in the Alps to the delta in Holland, has witnessed many of the most important events in the history of Europe since before the birth of Christ. Julius Cæsar, during his campaigns in Gaul, found the Teutons pressing westward across the Rhine. Cæsar himself built a bridge across the Rhine and fought against the Germans. From that time on there was a fierce conflict of races for the possession of this rich valley. The great Emperor Charlemagne pressed his conquests eastward across the Rhine, and during the later middle ages a large number of small principalities sprung up with their feudal castles commanding the valley and its commerce. In Switzerland, around its sources and mountain lakes, there were frequent struggles in maintaining the independence of the Swiss against the Burgundians on the west, and the Austrians on the east. The stories of William Tell and of Arnold Winkleried, and of the wars against Charles the Bold of Burgundy, illustrate these Swiss wars of independence. In the delta lands around the mouth of the Rhine the Dutch, under William the Silent, fought out also a great war of Independence against the Spaniards. The central portions of the Rhine have long been in dispute between France and Germany. More than two hundred years ago Louis XIV succeeded in capturing Alsace and Lorraine and

made them a part of France. They remained a part of the French territory until 1871, when the armies under King William and Bismarck captured Paris and compelled the French to give them back to Germany. In celebration of this great success of the Germans, the Niederwald Monument was set up across from Bingen to declare to the world that Germany was in full possession of both sides of the Rhine.

During the successful campaigns of Napoleon the First the whole Rhine territory on both sides was in full control of the French, and French soldiers even stabled their horses in the famous cathedrals and churches along the Rhine. But with the overthrow of Napoleon at Waterloo in 1815 the Rhine provinces were restored to Prussia.

It was at Worms on the middle Rhine that Martin Luther met Charles the Fifth and the princes of Germany in the great diet at the outbreak of the Reformation. These brief statements show that the greatest men of Europe for two thousands years have carried out their ambitious enterprises in the Rhine Valley .

At Mainz, on the Rhine, is a monument to Gutenberg, the inventor of printing, and in various cities along the Rhine are monuments of many other eminent men whose homes are in the valley.

The two most remarkable literary men of Germany, Goethe and Schiller, were born near the Rhine—Goethe

at Frankfort and Schiller near the Neckar, and their early lives are identified with the Rhine regions in many ways. Many of their works, in fact, deal with characters and events connected with the Rhine valley.

From the earliest ages the Rhine has been celebrated in legend and in myth, more perhaps than any other river in Europe. The Nibellungen Song, which describes the exploits of Siegfried, centers chiefly in the lowland of the Rhine, in the Drachenfels, and at Worms. One of the most famous of all myths, the William Tell story, has been worked out with such success in Schiller's drama of William Tell, that it has made Lake Lucerne in Switzerland one of the most famous regions in the world. Some of the most familiar popular legends of the German people, like the Lorelei, belong wholly to the Rhine. Even some of the most familiar poems in the English, like "Bingen on the Rhine," and "Bishop Hatto," are English renderings of the Rhine stories. The most famous, also, of the German national songs is the "Watch on the Rhine," which best expresses the patriotic feeling of the whole German race toward the Rhine.

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